Leptochloa southwoodii (Poaceae: Chloridoideae), a new species from south-east Queensland

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Summary

Snow, Neil, & Bryan K. Simon. (1997). *Leptochloa southwoodii* (Poaceae, Chloridoideae), a new species from south central Queensland. *Austrobaileya* 5(1): 137–143. *Leptochloa southwoodii*, a new species from the brigalow belt of southern Queensland, is described and diagnosed from *L. ligulata* Lazarides, its apparent sister species.

Key words: *Leptochloa southwoodii*, Poaceae, Chloridoideae, Queensland, Australia, conservation

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Introduction

The eragrostoid genus *Leptochloa* P. Beauv. (sensu lato, including *Diplachne* P. Beauv.) consists of approximately forty taxa, the diversity of which is spread fairly equally among the neotropics, Africa plus southern Asia, and Australia (Clayton & Renvoize 1986; Watson & Dallwitz 1994; Snow 1997a). A few species also are known primarily or exclusively from oceanic islands (Snow 1997a). The generic boundaries of *Leptochloa* have been the subject of more dispute than any other in the subfamily (Jacobs, 1987) and numerous problems have surrounded the taxonomy of at least two species groups (Snow 1997a, 1997b).

During April of 1996 we made extensive collections of *Leptochloa* as part of fieldwork for the first author's dissertation research, which entailed monographing *Leptochloa* from a global perspective (Snow 1997a). Our activities focused primarily on the brigalow (*Acacia harpophylla*) vegetation of southern and central Queensland (Beadle 1981), the center of diversity for *Leptochloa* in Australia. In the Darling Downs District in the vicinity of Southwood National Park and an area somewhat north we found an undescribed species of *Leptochloa* that is consistently diagnosable by ordinary means (Snow 1997b), which we describe here as new.

Materials and methods

Specimens were collected in the field, pressed and dried following standard procedures. Material collected for further study included fresh green leaf material for anatomical analyses and anticipated DNA-based molecular studies, young inflorescences for meiotic studies, and mature caryopses for growing plants in the greenhouse. Since the late stage of the flowering season resulted in a relatively poor quality of possible type specimens collected in the field, we opted to prepare greenhouse grown material as the type specimens. Plants were grown in the greenhouse from seed sources *Snow & Simon* 7362 and 7364 for making additional observations. After greenhouse grown plants were photographed and measured, modifications were added to the initial species description, based primarily on field-collected specimens. Mature lemmas were analyzed for micromorphological characters by scanning electron microscopy following Snow (1996). Descriptive terminology follows Systematics Association Committee (1962).

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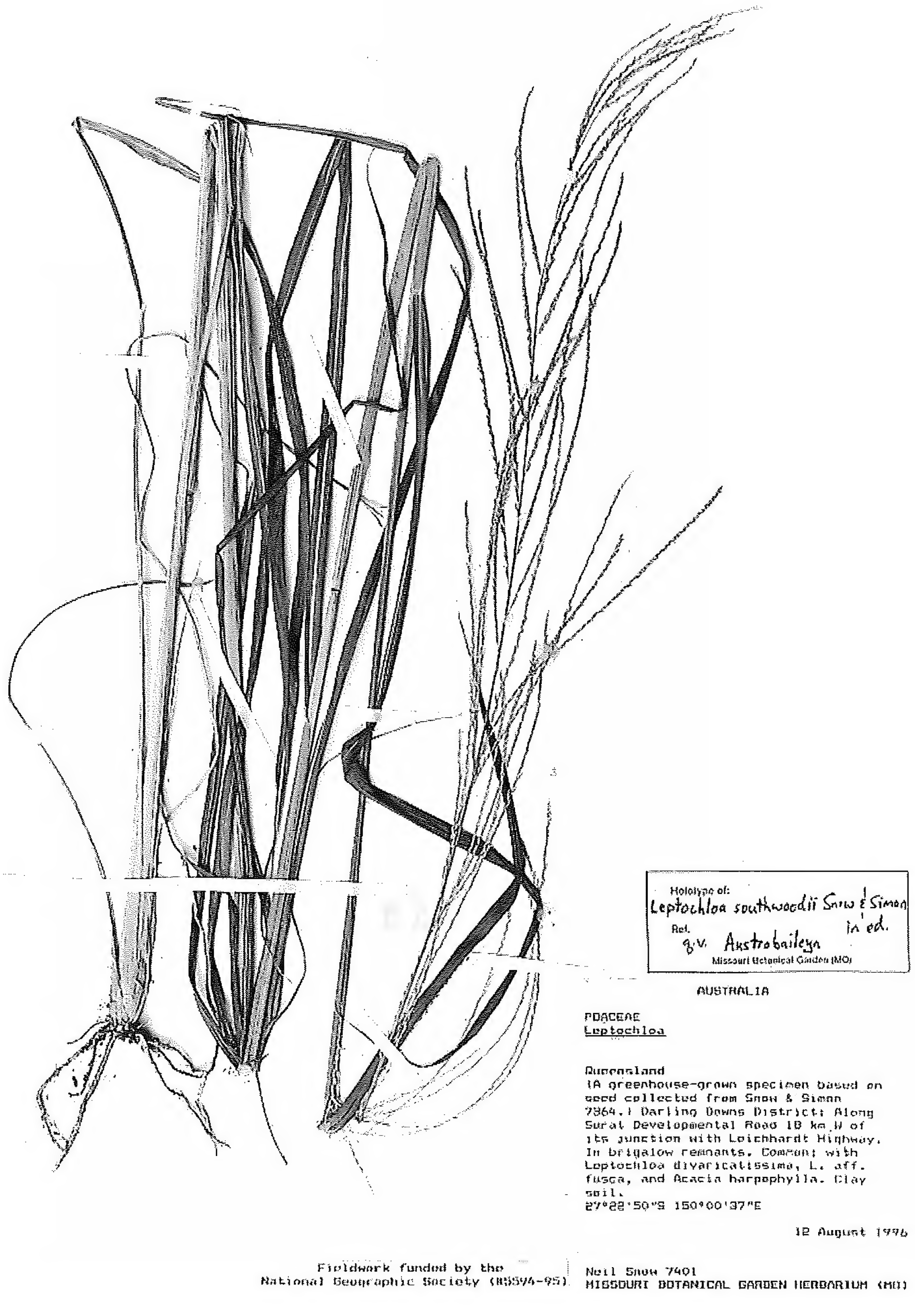
Leptochloa southwoodii N. Snow & B.K. Simon, **sp. nov.** Haec species *Leptochloae ligulatae* Lazarides similis sed ab ea vagina foliari tubercula et pilos divergentes per totam longitudinem gerente etiam spiculis anguste ellipticis plerumque 3.5–4.6 mm longis differt. **Typus:** *Snow* 7401, a greenhouse-grown specimen based on seed collected from *Snow & Simon* 7364, Queensland: Darling Downs District: Along Surat Developmental Road 18 km W of its junction with Leichhardt Highway. In brigalow remnants. Common; with *Leptochloa divaricatissima*, *L.* aff. *fusca*, and *Acacia harpophylla*. Clay soil. GPS 27°22'50"S, 150°00'37"E. (Fig. 1) (Holo: BRI; iso: MO,CANB).

Additional specimens examined: **Queensland**. Darling Downs District: 17.8 km W of Moonie on Moonie Highway, roadside in disturbed clay soil on edge of remnants of *Callitrus* woodland, 27°48'39"S, 150°13'32"E, 10 April 1996, *Snow & Simon* 7350 (BRI,CANB,K,MO,NSW); 22 km W of Moonie along Moonie Highway. Edge of remnants of *Callitrus*-brigalow woodland, 27°49'15"S, 150°11'32"E, 10 April 1996, *Snow & Simon* 7362 (BRI,K,MO); 'Myall Park', Crater Paddock, 27°13'23"S, 149°41'44"E, drying margin of gilgai, 25 April 1994, *Jacobs* 7133 (BRI,NSW); Chinchilla, *Beasley* 127 (BRI). Leichhardt District: Greycliffe, *White* 10878a (BRI), 24°2–'S, 150°1–'E. Port Curtis District: Near Wandoan, *Belson* 5440 (K).

Plants annual, caespitose, 137–170 cm tall in flower. Culms one to several, compressed-keeled below and striate, sometimes branching, ascending to erect, round and hollow. Internodes glabrous. Nodes mostly four, glabrous. Leaf sheaths mostly green and distinctly striate, with moderate to dense covering of tuberculate-based pilose hairs throughout length (sometimes the hairs absent near base), the hairs mostly divergent or ascending, but often disarticulating with maturity. Ligule membranous, 3–5.5 mm long, becoming somewhat lacerate, somewhat shorter in the middle. Leaf blades scabrous above and below, lacking pilose hairs and tubercles; to 12.5 mm wide, linear, flat to inrolled, to over 55 cm long. Mature panicles completely exserted or somewhat inserted below, up to half the length of the culm, somewhat nodding above, sometimes pilose just below lowest panicle branch. Panicle branches of up to 65 alternate to subwhorled racemes, these to 17.5 cm long but decreasing in length apically, slightly divergent to (mostly) ascending. Spikelets narrowly elliptic (3:1), 3–6 flowered, 3.5–4.6 mm long, distant to somewhat imbricate. Callus glabrous to slightly hairy. Glumes 1-nerved, thinly membranous, scabrous along midnerves. Lower glume broadly lanceolate to ovate (2:1), 0.8–1.3 mm long, apically acute to somewhat obtuse. Upper glume elliptic (2:1), ovate, to widely obovate (6:5), 1.2–1.7 mm long. Rachilla segments c. $\frac{2}{5}-\frac{1}{3}$ the length of the lemma. Lowest lemmas (when flattened) elliptic to slightly obovate, 1.5–.0 mm long, apically truncate to broadly obtuse, often broadly emarginate; lateral nerves flush with surface and not extending to edges, sericeous along lateral nerves and midnerve. Palea narrowly elliptic (3:1), subequal, sericeous along the nerves. Anthers ca 0.2 mm long. Caryopsis ca 0.8 mm long, obovate (3:2) to elliptic (3:2) in hilar profile, more or less circular in cross-section at midpoint, the pericarp coarsely rugose or minutely scalariform. Chromosome number unknown.

Notes: In overall morphology *Leptochloa southwoodii* most closely resembles another species endemic to Queensland, *L. ligulata* Lazarides (Lazarides, 1980). It differs most notably from the latter by having a moderate to dense covering of tubercle-based pilose hairs occurring throughout the length of the leaf sheath (Fig. 2), which at the most only occur at the very base of the lower sheaths of *L. ligulata* (Snow, pers. obs.). In addition, the spikelets of *L. southwoodii* are somewhat longer and more elliptic. The ranges of these two species remain poorly known (Fig. 3), but a recent collection (*Snow & Simon* 7324; BRI,MO) of *Leptochloa ligulata* from the Darling Downs indicates at least some overlap.

The pubescent sheaths of *Leptochloa southwoodii* give it a superficial resemblance to *L. peacockii* (Maiden & Betche) Domin, a northeast and eastcentral Australian taxon of unstable rank (Lazarides 1980; Stanley & Ross 1989; Simon 1993; Wheeler et al. 1994), which Snow (1997a) reduced in rank. However,



Holotype of:
Leptochloa southwoodii Snow & Simon in ed.
Ret.
q.v. Austrobaileya
Missouri Botanical Garden (MO)

AUSTRALIA

POACEAE
Leptochloa

Queensland
(A greenhouse-grown specimen based on seed collected from Snow & Simon 7364.) Darling Downs District: Along Surat Developmental Road 18 km W of its junction with Leichhardt Highway. In brigalow remnants. Common; with Leptochloa divaricatissima, L. aff. fusca, and Acacia harpophylla. Clay soil.
27°22'50"S 150°00'37"E

12 August 1996

Fieldwork funded by the
National Geographic Society (#5594-95)

Neil Snow 7401
MISSOURI BOTANICAL GARDEN HERBARIUM (MO)

Fig. 1. Holotype of *Leptochloa southwoodii*, (*Snow* 7401), a specimen grown in the greenhouses at the Missouri Botanical Garden from seed collected from *Snow & Simon* 7364 (housed at BRI)

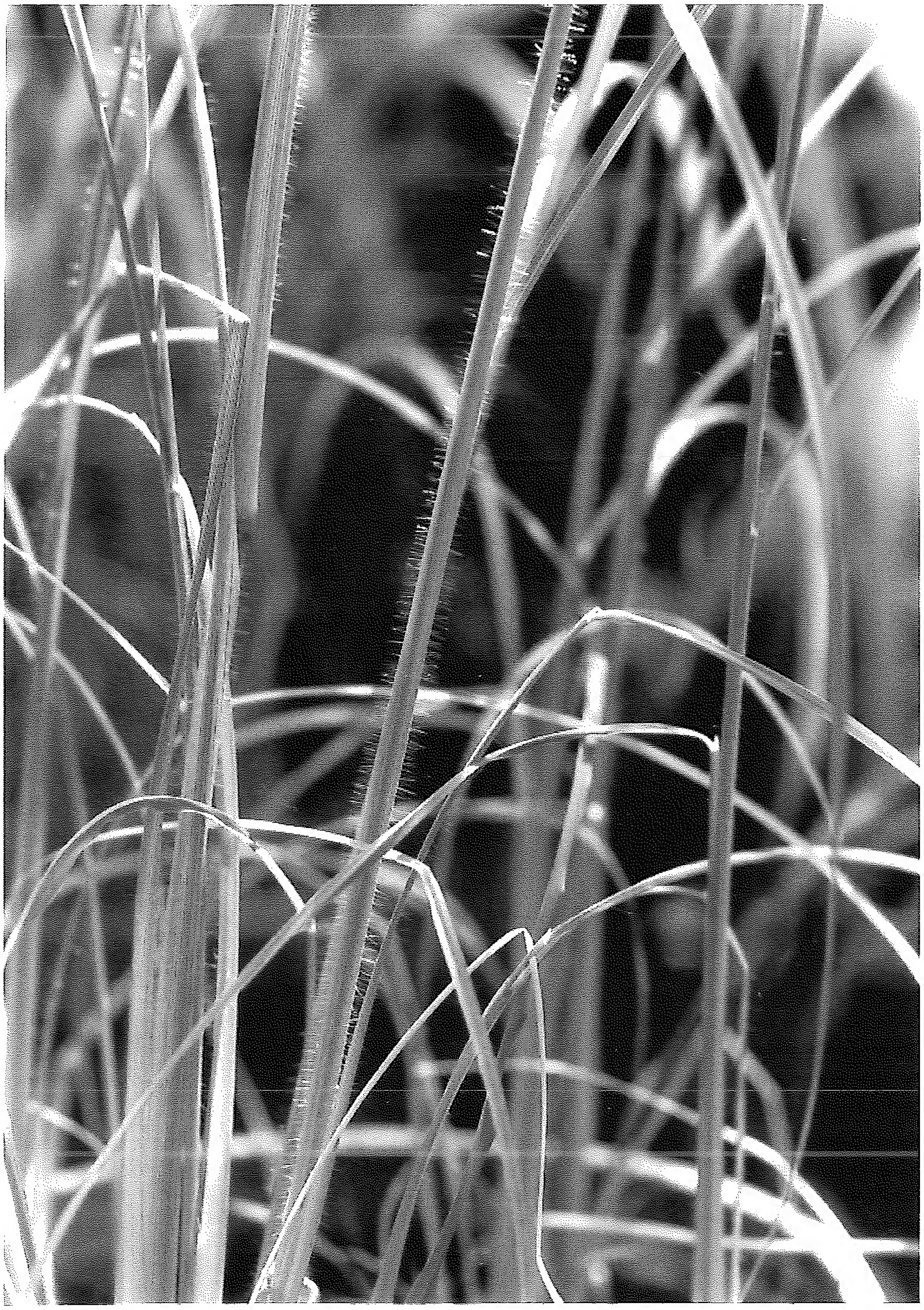


Fig. 2. Close-up of holotype of *Leptochloa southwoodii* prior to pressing (cf **Fig. 1**) showing moderate to dense covering of tubercle-based divergent pilose hairs on the leaf sheaths, which consistently diagnoses the species from the likely sister species, *Leptochloa ligulata* Lazarides.

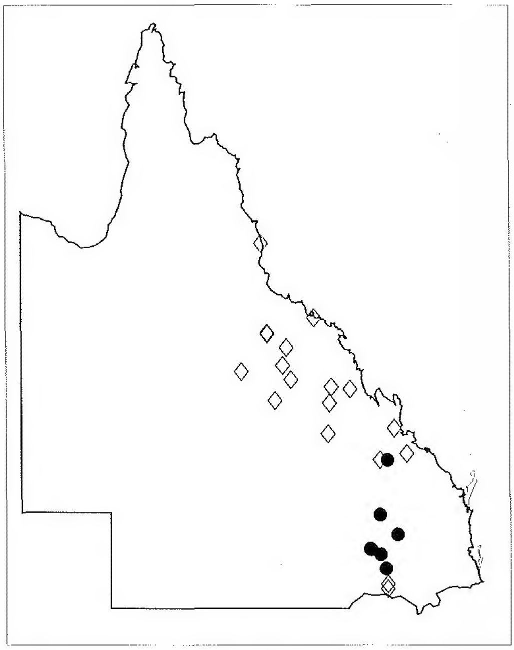


Fig. 3. Range map showing the known distribution of ● *Leptochloa southwoodii* and ◇ *L. ligulata*, both apparent endemics to Queensland.

L. southwoodii differs by lacking the moderate to dense covering of appressed tomentose hairs along the leaf blades and the widely diverging (at maturity), relatively long lemmatal hairs characteristic of *L. peacockii* (Snow 1997a).

The leaf sheaths of our field collections appeared to have small amounts of a brownish exudate, and thereby had significant amounts of windblown soil and other debris adhered to their surface. However, greenhouse grown material lacked any apparent exudate (Snow, pers. obs.).

Leptochloa southwoodii was discovered after the completion of a study of lemmatal micromorphological characters of *Leptochloa* and related genera (Snow 1996). The species was found to possess cork cells, normal macrohairs, chloridoid bicellular microhairs, and prickles, but was lacking in papillae born on either short or long cells and lacking in silica cells (Fig. 4), a combination of which accords with many species of *Leptochloa* (Snow 1996).

***Etymology*:** Since we first collected the new species along the southern boundary of Southwood National Park it seems appropriate to honour the park with the specific epithet.

***Conservation status*:** Given time constraints we were unable to assess more thoroughly the overall range and abundance of *Leptochloa southwoodii*, which would be better accomplished earlier in the growing season. Along the southern boundary of Southwood National Park specimens were seen only sporadically in the area between the road and adjacent fencelines, and rarely did we find more than five individuals at a given site. From Southwood National Park we encountered plants along the roadside to about 15 km W of Moonie. Along the Surat Developmental Road the species was seen to be locally common at one site around gilgais in brigalow remnants just over the fenceline south of the road. Pending the discovery of additional populations that would enlarge the number of known sites and overall geographical range, we recommend that *L. southwoodii* be listed as a vulnerable species.

Acknowledgments

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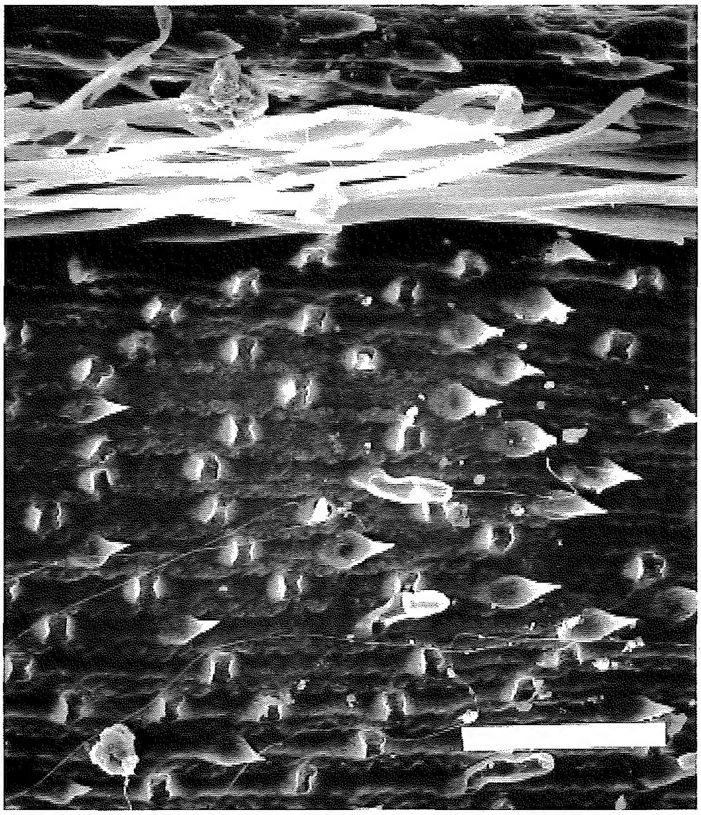

Fig. 4. Scanning electron miscroscope image of lemmatal surface of *Leptochloa southwoodii* N. Snow & B.K. Simon (*Snow* 7364, MO). Lemmatal apex towards right; macrohairs lie the near midvein (not visible). Bar = 50µm.

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